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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,167	10/28/2003	Lenvis Liu	MXIC 1518-2	7158

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EXAMINER	
RICHARDS, N DREW	

ART UNIT	PAPER NUMBER
2815	

DATE MAILED: 06/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/695,167	LIU ET AL.
	Examiner	Art Unit
	N. Drew Richards	2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 March 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 3 recites the limitation "the insulating layer" in line 10. There is insufficient antecedent basis for this limitation in the claim. It is indefinite as one cannot ascertain whether the same insulating layer as the base insulator layer is being claimed or whether this limitation is referring to some other insulating layer.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-4 are rejected under 35 U.S.C. 102(e) as being anticipated by Al-Shareef et al. (U.S. Patent No. 6,281,543 B1).

Al-Shareef et al. disclose a wave-shaped capacitor over a base conductive layer 142, the base conductive layer over a base insulator layer 118/122 on a die in figures 1-13 and on columns 1-8. Al-Shareef et al. disclose the capacitor including:

a wave-shaped pattern in the base conductive layer 142 comprising at least two adjacent trenches in the base conductive layer 142 (fig. 13 shows the final structure but does not have layer 142 labeled, see figure 12 for labeling of layer 142; the base conductive layer 142 is considered to have a wave shaped pattern as the base conductive layer 142 has at least two adjacent trenches; since conductive layer 142 is formed conformal to trenches formed in insulator 126 the conductive layer 142 is considered to have trenches);

forming a multilayer structure 144/152/154, contoured over the base conductive layer 142 (figure 13 shows the final structure but does not label layer 144, see figure 12 for labeling of layer 144), the mulitlayer structure comprising:

a first metal plate layer 144 in electrical contact with the base conductive layer 142 (labeled in figure 12);

an insulating layer 152 over the first plate layer 144 (figure 13);

a metal second plate layer 154 over the insulating layer 152 (figure 13; the second plate layer is considered the portion of layer 154 that is located inside the base conductive layer 142); and

an interconnect layer 154 over the multilayer structure including at least one interconnection with the second plate layer 154 (figure 13; the interconnect layer is considered the portion of layer 154 that is substantially horizontal in the figure and extends over and outside the base conductive layer 142; thus the interconnect layer forms at least one interconnection with the second plate layer).

With regard to claim 2, the limitation of the trenches being formed by a lithographic or direct writing process are product-by-process limitations that do not structurally distinguish over the prior art. Nonetheless, Al-Shareef et al. disclose the trenches formed a lithographic or direct writing processes (figures 3-6 show the formation of the shape of the trenches) and the multilayer structure has a thickness along the sidewalls of the trenches that is less than half of a minimum feature size of the lithographic or direct writing process (figure 13 shows the thickness of the multilayer structure being less than half the width of the trenches). The minimum feature size in this case is the width of the trench as that is the minimum size formed by the process used to form the trench, and the multilayer structure can be seen to have a thickness along the sidewalls of the trench that is less than half the minimum feature size (trench width).

With regard to claim 3, Al-Shareef et al. disclose a wave-shaped capacitor over a metal base conductive layer 146, the base conductive layer over a base insulator layer 118/122 on a die in figures 1-13 and on columns 1-8. Al-Shareef et al. disclose the capacitor including:

a wave-shaped pattern in the metal base conductive layer 146 comprising at least two adjacent trenches in the metal base conductive layer 146 (fig. 13 shows the final structure but does not have layer 146 labeled, see figure 10 for labeling of layer 146 as part of layer 144; the base conductive layer 146 is considered to have a wave shaped pattern as the base conductive layer 146 has at least two adjacent trenches;

since conductive layer 146 is formed conformal to the HSB 142 in the trenches formed in insulator 126 the conductive layer 146 is considered to have trenches);

a multilayer structure 152/154, contoured over the metal base conductive layer 146 (figure 13 shows the final structure but does not label layer 146, see figure 10 for labeling of layer 146), the multilayer structure comprising:

a second metal plate layer 154 over an insulating layer 152 (figure 13; the second plate layer is considered the portion of layer 154 that is located inside the base conductive layer 146); and

an interconnect layer 154 over the multilayer structure including at least one interconnection with the second plate layer 154 (figure 13; the interconnect layer is considered the portion of layer 154 that is substantially horizontal in the figure and extends over and outside the base conductive layer 146; thus the interconnect layer forms at least one interconnection with the second plate layer).

With regard to claim 4, the limitation of the trenches being formed by a lithographic process is a product-by-process limitation that does not structurally distinguish over the prior art. Nonetheless, Al-Shareef et al. disclose the trenches formed by a lithographic process (figures 3-6 show the formation of the shape of the trenches) and the multilayer structure has a thickness along the sidewalls of the trenches that is less than half of a minimum feature size of the lithographic process (figure 13 shows the thickness of the multilayer structure being less than half the width of the trenches). The minimum feature size in this case is the width of the trench as that

is the minimum size formed by the process used to form the trench, and the multilayer structure can be seen to have a thickness along the sidewalls of the trench that is less than half the minimum feature size (trench width).

Response to Arguments

5. Applicant's arguments filed 3/10/05 have been fully considered but they are not persuasive.

Applicant has argued that Al-Shareef et al. does not teach the claimed invention because they use HSG-poly. It is assumed that applicant is arguing that the HSG-poly does not read on the metal first plate in claim 1 or the metal base conductor in claim 3. This is not persuasive as Al-Shareef et al. teach a double metal layer 146/148 over the HSG-poly. This double metal layer, using both layers or a single layer 146 as explained in the rejection above read on the claimed invention.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to N. Drew Richards whose telephone number is (571) 272-1736. The examiner can normally be reached on Monday-Friday 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

NDR

GEORGE ECKERT
PRIMARY EXAMINER